

REMARKS

In the Office Action dated July 31, 2007, the Examiner (1) rejected claim 11 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,785,292 to Vogel ("Vogel") in view of U.S. Patent No. 6,370,153 to Eng ("Eng") and further in view of U.S. Patent No. 6,940,874 to Ruszczyk et al. ("Ruszczyk"); (2) rejected claims 39, 42-44, 49-51, and 53-55 under 35 U.S.C. § 103(a) as being unpatentable over Ruszczyk in view of U.S. Patent No. 6,041,051 to Doshi et al. ("Doshi"); (3) rejected claims 41, 48, and 57 under 35 U.S.C. § 103(a) as being unpatentable over Ruszczyk in view of Doshi and further in view of U.S. Patent Application Publication No. 2006/0013124 to Fottak ("Fottak"); and (4) rejected claims 45, 52, and 56 under 35 U.S.C. § 103(a) as being unpatentable over Ruszczyk in view of Doshi and further in view of Eng. Applicant respectfully traverses these rejections.¹

Claims 11, 39, 41-46, and 48-57 are currently pending.

1. Rejection of claim 11 under § 103(a)

Claim 11 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Vogel in view of Eng and in further view of Ruszczyk. Applicant respectfully traverses this rejection.

Claim 11 recites:

A method of scheduling cable modems in a broadband communications system, comprising:
receiving bandwidth allocation requests from the cable modems;

¹ As Applicant's remarks with respect to the Examiner's rejections are sufficient to overcome these rejections, Applicant's silence as to assertions by the Examiner in the Office Action or certain requirements that may be applicable to such rejections (e.g., whether a reference constitutes prior art, motivation to combine references, assertions as to dependent claims, etc.) is not a concession by Applicants that such assertions are accurate or such requirements have been met, and Applicants reserve the right to analyze and dispute such assertions/requirements in the future.

for each of the bandwidth allocation requests, determining a mini-slot size based on a modulation and symbol rate associated with a respective bandwidth allocation request;
scheduling transmission on a physical upstream channel from cable modems associated with each of the bandwidth allocation requests based on a respective mini-slot;
segregating the physical upstream channel into multiple virtual upstream channels, wherein each of the multiple virtual upstream channels is associated with a different modulation and symbol rate;
grouping the cable modems into a plurality of groups; and
assigning a different one of the multiple virtual upstream channels to each of the plurality of groups for upstream transmission.

Vogel, Eng, and Ruszczyk whether taken alone or in any reasonable combination, do not disclose or suggest the combination of features of claim 11.

For example, the Examiner acknowledges that Vogel “fails to disclose determining mini-slot size based on symbol rate and modulation type” as recited in claim 11. (Office Action at p. 3.) Instead, the Examiner relies on column 9, lines 65-67, of Eng for allegedly disclosing this feature. (Office Action at p. 3.)

At column 9, lines 65-67, Eng discloses:

This maximizes efficiency of the upstream payload channel yet ensures high reliability and short mini-slot size on the upstream control channel. By reducing the mini-slot size, the likelihood of collision on the upstream control channel decreases, and retransmission delays in the event of collisions can be overall reduced (depending on the collision resolution technique utilized).

This section of Eng discloses that the reduction of the mini-slot size reduces the likelihood of collisions and the delay caused by collisions. This section of Eng, however, says nothing about determining the mini-slot size, much less determining the mini-slot size “based on a modulation and symbol rate associated with a respective

bandwidth allocation request,” as recited in claim 11. In fact, the Examiner does not allege that Eng discloses this feature. The Examiner only alleges that Eng “discloses determining mini-slot size.” (Office Action at p. 3.) The Examiner does not allege that Eng discloses determining mini-slot size “based on a modulation and symbol rate associated with a bandwidth allocation request,” as claimed. In fact, this section of Eng does not disclose, suggest, or have anything to do with, the determination of a mini-slot size “based on a modulation and symbol rate associated with a bandwidth allocation request,” as recited in claim 11.

Ruszczyk does not cure the deficiencies of Vogel or Eng, and also does not disclose or suggest “determining a mini-slot size based on a modulation and symbol rate associated with a respective bandwidth allocation request,” as recited in claim 11. In addition, the Examiner does not allege that Ruszczyk discloses or suggests this feature, as recited in claim 11.

In view of the remarks above, Applicant submits that Vogel, Eng, and Ruszczyk, whether taken alone or in any reasonable combination, do not disclose or suggest the combination of features recited in claim 11. Applicant respectfully requests that the rejection of claim 11 under § 103(a) be withdrawn.

2. Rejection of claims 39, 42-44, 49-51, and 53-55 under 35 U.S.C. § 103(a)

Claims 39, 42-44, 49-51, and 53-55 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ruszczyk in view of Doshi. Applicant respectfully traverses this rejection.

Claim 39 recites:

A method, comprising:

grouping cable modems into a plurality of groups, wherein the cable modems are grouped into the plurality of groups based on a latency associated with each of the plurality of groups; and assigning a different virtual upstream channel to each of the plurality of groups, wherein each virtual upstream channel is associated with a different modulation, symbol rate or preamble.

The Examiner admits that Ruszczyk does not disclose or suggest grouping cable modems based on a latency associated with each of the plurality of groups. (Office Action at p. 4.)

The Examiner, however, alleges that Doshi, in col. 31, lines 7-10 (claim 34), discloses “grouping cable modems based on propagation delay.” (Office Action at p. 4.) Doshi, however, does not disclose “grouping cable modems based on propagation delay,” as the Examiner asserts. Claim 34 of Doshi recites:

The method in accordance with claim 33 wherein one of said control and signaling messages is a ranging message, said ranging message transmitted upstream within said superslot in said USC region, said ranging message utilized to compensate for propagation delay differences between a group of cable modems and said headend within said network.

First, claim 34 relates to “a group,” not a “plurality of groups,” as recited in claim 39.

Further, the section of the written description corresponding to claim 34 is at column 16, lines 32-40. In fact, the only two places where “propagation delay” is mentioned are in claim 34 and at column 16, line 35. Column 16, lines 32-40, of Doshi sheds light onto the meaning of claim 34 (underline added here):

Each two consecutive MAPs for an upstream channel are separated in time by the duration of one frame. Frame duration is selected to be slightly longer than the round trip propagation delay between the headend and the furthest cable modem, plus the processing time needed for MAP generation at the HE, plus the processing time needed at the CM to interpret the MAP. Therefore, the MAP for each upstream frame is guaranteed to arrive at each cable modem within the next upstream frame. As a consequence of the combination of a rapid report time for MAP information and the

distribution over time of MAP generation at the HE, streamlined and efficient control over the operation of the medium access control (MAC) for a plurality of upstream channels associated with one downstream channel is maintained.

Claim 34 (e.g., column 31, lines 7-10) and column 16, lines 32-40 Doshi disclose a frame duration based on a propagation delay. These sections of Doshi simply do not disclose “grouping cable modems based on propagation delay,” as the Examiner alleges. Therefore, these sections of Doshi also do not disclose “grouping cable modems into a plurality of groups, wherein the cable modems are grouped into the plurality of groups based on a latency associated with each of the plurality of groups,” as recited in claim 39.

In view of the remarks above, Applicant submits that Ruszczyk and Doshi, whether taken alone or in any reasonable combination, do not disclose or suggest the combination of features recited in claim 39. Applicant respectfully requests that the rejection of claim 39 under § 103(a) be withdrawn.

Claims 42-44 depend on claim 39 and include all the features of claim 39. Therefore, claims 42-44 are allowable over Ruszczyk in view of Doshi for at least the reasons set forth above with respect to claim 39. Therefore, Applicant respectfully requests that the rejection of claims 42-44 under § 103(a) be withdrawn.

Although claims 46 and 53 have different scope than each other and claim 39, they include some similar recitations. For example, claim 46 recites “wherein the cable modems are grouped into the plurality of groups based on a latency associated with each of the plurality of groups.” Claim 53 recites “grouping cable modems into different groups based on latencies associated with the cable modems.” Therefore, claims 46 and 53 are allowable over Ruszczyk in view of Doshi for similar reasons to those set forth above with respect to claim

39. Applicant respectfully requests that the rejection of claims 46 and 53 under § 103(a) be withdrawn.

Claims 49-51 and 54-55 depend on claims 46 and 53, respectively. Therefore, these claims are allowable for at least the reasons set forth above with respect to claims 46 and 53. Thus, Applicant respectfully requests that the rejection of claims 48-52 and 54-56 under § 103(a) be withdrawn.

3. Rejection of claims 41, 48, and 57 under 35 U.S.C. § 103(a)

Dependent claims 41 and 48 and independent claim 57 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Ruszczyk in view of Doshi and further in view Fottah.

Claims 41 and 48 depend on claims 39 and 46, respectively, and include all the features of their respective base claims. Fottah does not cure the deficiencies of Ruszczyk or Doshi disclosed above with respect to claims 30 and 46. Therefore, none of Fottah, Ruszczyk, or Doshi, alone or in reasonable combination disclose or suggest all the features of claims 41 and 48. At least for this additional reason, Applicant respectfully requests that the Examiner reconsider and withdraw the rejection of claims 41 and 48 under § 103(a).

Furthermore, dependent claim 41 recites “differentiating slower cable modems from faster cable modems” and “assigning bandwidth to the cable modems based on the differentiation such that the slower cable modems are allowed to transmit data proportionately more frequently than faster cable modems.” The Examiner admits that Ruszczyk “fails to to disclose differentiating slower cable modems from faster cable modems and assigning bandwidth to the cable modems based on the differentiation such that the slower cable modems are allowed to transmit data more frequently than faster cable modems.” (Office

Action at p. 6.) The Examiner cites to paragraph 100, lines 14-16, of Fottak for allegedly disclosing these features.

At paragraph 100, lines 14-16, Fottak discloses:

For example, if at state 94, it is determined that one of the modems operates at a different speed than the other modem, at state 96, the faster modem may adjust its speed to a lower speed, specifically that of the slower modem's speed or yet a further slower speed, in order to effectively communicate with the latter.

This section of Fottak discloses slowing down the transmission speed of one modem in order for it to communicate directly with a slower modem. Fottak has nothing to do with “assigning bandwidth . . . on the differentiation such that the slower cable modems are allowed to transmit data proportionately more frequently than faster cable modems,” as recited in claim 41.

Furthermore, the Examiner alleges that Fottak merely discloses “identifying modems operating at different speed.” (Office Action at p. 6.) This alleged disclosure of Fottak falls far short of the acknowledged deficiencies of Ruszczyk, specifically that Ruszczyk fails to disclose “assigning bandwidth to the cable modems based on the differentiation such that the slower cable modems are allowed to transmit data more frequently than faster cable modems.” (Office Action at p. 6.) To bridge the gap, the Examiner alleges that:

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Ruszczyk and Doshi by adding to it the feature of differentiating cable modems by speed and assigning more frequently unused bandwidth of a given upstream channel to a modem operating at slower data rate such that the bandwidth would not be wasted.

(Office Action at p. 6.) This assertion by the Examiner goes far beyond the teachings of the references and, instead, amounts to an “Official Notice.” Applicant respectfully disagrees

with this assertion by the Examiner. Applicant respectfully requests that the Examiner cite references in support of the Examiner's assertion or provide an affidavit if it is within the Examiner's personal knowledge. See M.P.E.P. § 2144.03.

Thus, for at least for the reasons given above, Ruszczyk, Doshi and Fottak, alone or in reasonable combination, do not disclose or suggest all the features of claim 41. Applicant respectfully requests that the Examiner reconsider and withdraw the rejection of claim 41 under § 103(a).

Although claims 48 and 57 are of different scope than claim 41, they include some similar language. Claim 48 recites, among other things, “means for differentiating slower cable modems from faster cable modems,” and “means for assigning bandwidth to the cable modems based on the differentiation such that the slower cable modems are allowed to transmit data proportionately more frequently than the faster cable modems.” Claim 57 recites, among other things, “differentiating slower cable modems from faster cable modems in a cable network” and “assigning upstream bandwidth to the cable modems based on the differentiation such that the slower cable modems are allowed to transmit data on the upstream proportionately more frequently than faster cable modems.” Claims 48 and 57, therefore, are patentable over the cited references for at least the reasons set forth above with respect to claim 41. Applicant respectfully requests that the rejection of claims 48 and 57 under § 103(a) be withdrawn.

4. Rejection of claims 45, 52, and 56 under 35 U.S.C. § 103(a)

Dependant claims 45, 52, and 56 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Ruszczyk in view of Doshi and further in view of Eng.

Claims 45, 52, and 56 depend ultimately on claims 39, 46, and 53, respectively, and includes all the features of their respective base claim. Eng does not cure the deficiencies of Ruszczcyk and Doshi discussed above with respect to claims 39, 46, and 53. Thus, claims 45, 52, and 56 are patentable over Eng, Rus, and Doshi for at least the same reasons as discussed above with respect to claim 39. At least for this additional reason, Applicant respectfully requests that the Examiner reconsider and withdraw the rejection of claims 45, 52, and 56 under § 103(a).

Claim 45 recites, among other things, “determining a mini-slot size based on the modulation and symbol rate of the virtual upstream channel to which a respective cable modem is assigned.” The Examiner acknowledges that Ruszczcyk “fails to disclose determining mini-slot size based on symbol rate and modulation type.” (Office Action at p. 7.) Instead, the Examiner alleges that Eng discloses this feature. As discussed above with respect to claim 11, neither Eng nor Doshi disclose or suggest at least this feature.

In view of the remarks above, Applicant submits that Ruszczcyk, Doshi, and Eng, whether taken alone or in any reasonable combination, do not disclose or suggest the combination of features recited in claim 45. Applicant respectfully requests that the rejection of claim 11 under § 103(a) be withdrawn.

Although claims 52 and 56 are of different scope than claim 45, they include some similar features. For example, claim 52 recites, among other things, “means for determining . . . a mini-slot size based on the modulation and symbol rate of the virtual upstream channel to which a respective cable modem is assigned.” Claim 56 recites, among other things, “determining a mini-slot size based on a modulation and symbol rate associated with a

respective bandwidth request.” Thus, claims 52 and 56 are allowable over the cited art for reasons similar to the reasons put forth for claim 11 above. Applicant respectfully requests that the Examiner reconsider and withdraw the rejection of claims 52 and 56 under § 103(a).

In view of the foregoing remarks, Applicant respectfully requests the Examiner's reconsideration of this application, and the timely allowance of the pending claims. If any questions remain, the Examiner is invited to contact the undersigned at the telephone number listed below.

To the extent necessary, a petition for an extension of time under 37 CFR § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1070 and please credit any excess fees to such deposit account.

Respectfully submitted,
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